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EXAMINER	
KESSLER, CHRISTOPHER S	
ART UNIT	PAPER NUMBER
1793	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/553,841	DAILY ET AL.	
	Examiner	Art Unit	
	CHRISTOPHER KESSLER	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 December 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *19-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *19-24* is/are rejected.

7)☒ Claim(s) *19-24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 23 December 2009 has been entered.

Status of Claims

2. Responsive to the amendment filed 23 December 2009, claims 19, 21, and 23 are amended. Claims 19-24 are currently under examination.

Status of Previous Rejections

3. Responsive to the amendment filed 23 December 2009, new grounds of rejection are presented.

Claim Objections

4. The entirety of the claims is objected to for failure to comply with 37 CFR 1.121. Claims have been labeled as “original” when they are in fact amended. Since the examiner believes the amendment is a bona fide attempt at a proper response, the

claims will be examined in order to expedite prosecution. Applicant is further directed to 37 CFR 1.121, which quite clearly describes the requirements for making amendments to the claims.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 19-23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 19 requires wherein the cross-directionally worked molybdenum component is worked in multiple directions along a single axis of symmetry of the component. This feature is not described in the instant specification. Claim 21 requires a similar limitation. Claim 23 requires forming a first workpiece having an axis of symmetry. This feature is not described in the instant specification. Claim 23 requires subjecting the workpiece to thermomechanical forces such that a cross sectional area of the first workpiece perpendicular to the axis of symmetry is reduced, then subjecting the workpiece to thermomechanical forces such that a cross sectional area of the second workpiece perpendicular to the axis of symmetry is increased. This feature is not described in the instant specification. Each

of claims 20, 22 and 24 is dependent on the independent claims, respectively, and is also not described.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 19-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 19 requires wherein the cross-directionally worked molybdenum component is worked in multiple directions along a single axis of symmetry of the component. However, the instant specification describes wherein a first workpiece and a second workpiece are worked to form the cross directionally worked component. The language in the claim would require that the cross-directionally worked component is further worked, which is completely inconsistent with the specification. Thus it is unclear from the claim what is being worked. Claim 21 requires a similar limitation. Each of claims 20 and 22 is dependent on the independent claims, respectively, and is also unclear.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 19 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2001/0001401 A1 issued to Segal (hereinafter "Segal"), in view of US 5,868,876 issued to Bianco et al. (hereinafter "Bianco").

Regarding claim 19, the examiner notes that the claim is written in product-by-process format. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). In the instant case, Segal does not teach the processing of the molybdenum powder or the consolidation of the billet, however, these steps are well known in the art, and do not materially affect the structure of the finished plate as claimed.

Segal teaches the invention substantially as claimed. Segal teaches a method of making a plate (see SUMMARY OF THE INVENTION). Segal teaches wherein the plate is made by thermally treating a workpiece and subjecting to thermo-mechanical forces in a first direction, then thermally treating the workpiece in a second direction different from the first direction (see paras. [0031]-[0039]). Segal teaches that the working may comprise cross rolling in four mutually perpendicular directions to form a

circle-like shape (see [0038]). Thus, Segal explicitly teaches working (rolling) in multiple directions along the same axis of symmetry in the case of four mutually perpendicular directions for rolling (i.e., the directions of working of multiple passes would have met the limitation by being 180˚ offset). Segal teaches that the workpiece is then recrystallized in a heat treatment (see [0041]).

Further, even if the process of Segal used to make the sputtering target material is not the same as that in the product-by-process claim, the product made by the process would have had the same features of the claimed product; namely a strong, uniform texture and a fine, uniform grain structure. This is the entire aim of Segal (see for example, SUMMARY OF THE INVENTION or paragraph [0001]).

Regarding the limitations of claim 23, of thermally treating the first workpiece and subjecting the workpiece to thermo- mechanical forces in a first direction such that a cross-sectional area of the first workpiece perpendicular to the axis of symmetry is reduced, and thermally treating the second workpiece and subjecting the second workpiece to thermo-mechanical forces in a second direction such that a cross-sectional area of the second workpiece perpendicular to the axis of symmetry is increased that is different from the first direction, Segal teaches these features. Segal teaches that metal is cast into an ingot that is heated, then swaged, and cut into billets (see [0044]-[0046]). Segal teaches that the billets are then heated and upset forged (see [0044]-[0046]). , meeting the limitations of the claims.

Segal does not teach wherein slicing or machining is a part of the process, however, it would have been obvious to one of ordinary skill in the art at time of

invention to have cut or sliced or machined the product, in order to obtain the desired size and enable use of the product in particular applications. Slicing or machining is well known in the art such that it would have been obvious to one of ordinary skill in the art upon reading Segal. For example Segal teaches in an example that the billet is cut into coupons in order to examine the structure (see [0045]).

Segal teaches wherein the method is applicable to make plate out of molybdenum materials (see SUMMARY OF THE INVENTION). Segal does not teach wherein the molybdenum metal contains an alloying element as claimed.

Bianco teaches a method of making a molybdenum billet. Bianco teaches that the billet is made by consolidation of molybdenum powders (see cols. 3-4). Bianco teaches that the molybdenum is alloyed with an oxide dispersion selected from a group consisting of lanthanum oxide (see cols. 3-4). Bianco teaches that after forming of the billet, the billet is worked by mechanical processes. Bianco teaches that this molybdenum maintains high strength and creep strength at elevated temperatures (see cols. 2-3).

It would have been obvious to one of ordinary skill in the art at time of invention to have practiced the invention of Segal using the billet of Bianco, because Bianco teaches that the molybdenum has high strength and creep strength at elevated temperatures (see cols. 2-3).

Regarding claim 19, Segal in view of Bianco is applied to the claim as stated above. Although Segal in view of Bianco does not teach what is the radial strength of the plate at 1600˚C, this feature would have been inherent in the plate, because Bianco

teaches that the material has high strength and creep strength at elevated temperature (see cols. 2-3). Further, the same material as claimed processed in the same way as claimed would have the claimed properties. Applicant is further directed to MPEP 2112.01.

11. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 3,622,824 issued to Atlee (hereinafter "Atlee"), in view of Segal and Bianco.

Regarding claims 20 and 21, Atlee teaches an x-ray target comprising a molybdenum plate (see Figs. 1-4, cols. 1-2). Atlee teaches that the plate comprises a focal track and a stem which is attached to the plate (see Figs. 1-4, cols. 1-2). Atlee does not teach wherein the plate is a cross-directionally worked molybdenum having an alloying element as claimed, or wherein the plate has a radial strength of at least 60 ksi at 1600˚C.

Segal teaches a method of making a plate (see SUMMARY OF THE INVENTION). Segal teaches wherein the plate is made by thermally treating a workpiece and subjecting to thermo-mechanical forces in a first direction, then thermally treating the workpiece in a second direction different from the first direction (see paras. [0031]-[0039]). Segal teaches that the workpiece is then recrystallized in a heat treatment (see [0041]). Segal teaches that this method produces a fine uniform structure and a strong, uniform texture (see SUMMARY OF THE INVENTION).]). Segal teaches that the working may comprise cross rolling in four mutually

perpendicular directions to form a circle-like shape (see [0038]). Thus, Segal explicitly teaches working (rolling) in multiple directions along the same axis of symmetry in the case of four mutually perpendicular directions for rolling (i.e., the directions of working of multiple passes would have met the limitation by being 180˚ offset).

Segal does not teach wherein slicing or machining is a part of the process, however, it would have been obvious to one of ordinary skill in the art at time of invention to have cut or sliced or machined the product, in order to obtain the desired size and enable use of the product in particular applications. Slicing or machining is well known in the art such that it would have been obvious to one of ordinary skill in the art upon reading Segal. For example Segal teaches in an example that the billet is cut into coupons in order to examine the structure (see [0045]).

Segal teaches wherein the method is applicable to make plate out of molybdenum materials (see SUMMARY OF THE INVENTION). Segal does not teach wherein the molybdenum metal contains an alloying element as claimed.

Bianco teaches a method of making a molybdenum billet. Bianco teaches that the billet is made by consolidation of molybdenum powders (see cols. 3-4). Bianco teaches that the molybdenum is alloyed with an oxide dispersion selected from a group consisting of lanthanum oxide (see cols. 3-4). Bianco teaches that after forming of the billet, the billet is worked by mechanical processes. Bianco teaches that this molybdenum maintains high strength and creep strength at elevated temperatures (see cols. 2-3).

Atlee in view of Segal and Bianco do not teach what is the radial strength of the plate at 1600˚C, this feature would have been inherent in the plate. Bianco teaches that the material has high strength and creep strength at elevated temperature (see cols. 2-3). Further, the same material as claimed processed in the same way as claimed would have the claimed properties. Applicant is further directed to MPEP 2112.01.

It would have been obvious to one of ordinary skill in the art at time of invention to have made the x-ray target of Atlee by practicing the invention of Segal, because Segal teaches that this method produces a fine uniform structure and a strong, uniform texture (see SUMMARY OF THE INVENTION), and to have used the billet of Bianco, because Bianco teaches that the molybdenum has high strength and creep strength at elevated temperatures (see cols. 2-3).

12. Claims 22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 3,622,824 issued to Atlee (hereinafter "Atlee"), in view of US Patent 3,136,907 issued to Kieffer et al. (hereinafter "Kieffer"), US 2001/0001401 A1 issued to Segal (hereinafter "Segal"), and US 5,868,876 issued to Bianco et al. (hereinafter "Bianco").

Regarding claim 24, the examiner notes that the claim is written in product-by-process format. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art,

the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Atlee teaches an x-ray target comprising a molybdenum plate (see Figs. 1-4, cols. 1-2). Atlee teaches that the plate comprises a focal track and a stem which is attached to the plate (see Figs. 1-4, cols. 1-2). Atlee does not teach wherein the plate is a cross-directionally worked molybdenum having an alloying element as claimed, or wherein the plate comprises a stem that is made by forging.

Kieffer teaches that an x-ray target is a plate made with an integral stem (see cols. 1-2, Figs. 1-2). Kieffer teaches that the stem is made by sintering a billet and then forging the billet into the desired shape (see cols. 1-2, Figs. 1-2). Kieffer teaches that this unitary construction of the plate and stem allows for increased loading (see cols. 1-2, Figs. 1-2).

Segal teaches a method of making a plate (see SUMMARY OF THE INVENTION). Segal teaches wherein the plate is made by thermally treating a workpiece and subjecting to thermo-mechanical forces in a first direction, then thermally treating the workpiece in a second direction different from the first direction (see paras. [0031]-[0039]). Segal teaches that the workpiece is then recrystallized in a heat treatment (see [0041]). Segal teaches that this method produces a fine uniform structure and a strong, uniform texture (see SUMMARY OF THE INVENTION). Segal teaches that the working may comprise cross rolling in four mutually perpendicular directions to form a circle-like shape (see [0038]). Thus, Segal explicitly teaches working (rolling) in multiple directions along the same axis of symmetry in the case of

four mutually perpendicular directions for rolling (i.e., the directions of working of multiple passes would have met the limitation by being 180˚ offset).

Segal does not teach wherein slicing or machining is a part of the process, however, it would have been obvious to one of ordinary skill in the art at time of invention to have cut or sliced or machined the product, in order to obtain the desired size and enable use of the product in particular applications. Slicing or machining is well known in the art such that it would have been obvious to one of ordinary skill in the art upon reading Segal. For example Segal teaches in an example that the billet is cut into coupons in order to examine the structure (see [0045]).

Segal teaches wherein the method is applicable to make plate out of molybdenum materials (see SUMMARY OF THE INVENTION). Segal does not teach wherein the molybdenum metal contains an alloying element as claimed.

Bianco teaches a method of making a molybdenum billet. Bianco teaches that the billet is made by consolidation of molybdenum powders (see cols. 3-4). Bianco teaches that the molybdenum is alloyed with an oxide dispersion selected from a group consisting of lanthanum oxide (see cols. 3-4). Bianco teaches that after forming of the billet, the billet is worked by mechanical processes. Bianco teaches that this molybdenum maintains high strength and creep strength at elevated temperatures (see cols. 2-3).

It would have been obvious to one of ordinary skill in the art at time of invention to have made the x-ray target of Atlee by practicing the invention of Segal, because Segal teaches that this method produces a fine uniform structure and a strong, uniform

texture (see SUMMARY OF THE INVENTION), and to have used the billet of Bianco, because Bianco teaches that the molybdenum has high strength and creep strength at elevated temperatures (see cols. 2-3), and to have used a forging method to produce an integral stem as taught by Kieffer, because Kieffer teaches that this unitary construction of the plate and stem allows for increased loading (see cols. 1-2, Figs. 1-2).

Regarding claim 22, Atlee in view of Kieffer, Segal and Bianco are applied to the claims as stated above. Atlee in view of Kieffer, Segal and Bianco do not teach what is the strength of the stem at 1600˚C, this feature would have been inherent in the plate. Bianco teaches that the material has high strength and creep strength at elevated temperature (see cols. 2-3). Further, the same material as claimed processed in the same way as claimed would have the claimed properties. Applicant is further directed to MPEP 2112.01.

Response to Arguments

13. Applicant's arguments filed 23 December 2009 have been fully considered but they are not persuasive.

Applicant argues that the material is worked in multiple directions along the same axis, as shown in figures 2(a) and (b). However, said figures only show that the material is worked by compression in upset forging. Applicant argues that the working shown in Fig. 2 is along the same axis as the original extrusion, however said feature is not described in the specification. There is no description of the orientation of the workpiece such that the deformation is along the same axis of symmetry. All that is disclosed is that the two directions of working are different.

Applicant argues that Segal teaches the rolling in two or four mutually perpendicular rolling directions and that this is parallel to the original axis of upset forging. Applicant further argues that Segal does not teach wherein multiple thermal (thermomechanical) treatments are carried out in a direction along the same axis. However, as discussed above, the teaching of Segal of rolling in four mutually perpendicular directions inherently meets the limitations of the claims of working in different directions along the same axis of symmetry. Further, the teaching of Segal of swaging the ingot, cutting into billets, followed by upsetting (see [0044]-[0046]) also meets said limitation as the direction of working of the swaging and the upsetting are in different directions along the same axis.

Applicant argues that the instant invention provides the advantages of high temperature properties such as radial strength. Applicant argues that known processes for making sputtering targets produced product with "poor grain size properties and poor temperature properties." However, the structure of the material of Segal would have been essentially the same as that of the sputtering material as claimed. Even if the process of Segal used to make the sputtering target material is not the same, the product made by the process would have had the same features of the claimed product, namely a strong, uniform texture and a fine, uniform grain structure. This is the entire aim of Segal (see for example, SUMMARY OF THE INVENTION or paragraph [0001]).

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER KESSLER whose telephone number is (571)272-6510. The examiner can normally be reached on Mon-Fri, 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ Roy King/
Supervisory Patent Examiner, Art Unit 1793

csk